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(54) MULTILAYERED STRUCTURE AND ITS  
MANUFACTURE

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(57) Abstract:

PROBLEM TO BE SOLVED: To form a resist which has superior optical purity and high adjustability and consists of a plurality of layers by forming an antireflection film on a substrate through vapor deposition.

SOLUTION: After an amorphous carbon film a-C:X:H containing hydrogen and fluoride is stuck to a substrate by plasma-intensified chemical gaseous-phase vapor deposition, a photoresist PR containing silicon is applied to the surface of the carbon film a-C:X:H with a spin coater and baked. Then, after the photoresist PR has been developed with a developing solution, the carbon film a-C:X:H is subjected to reactive ion etching in oxygen plasma. As a result, the carbon film a-C:X:H functions as an ideal thick planarized lower antireflection film in a two-layer resist system for ultraviolet and far-infrared rays and can improve line width control and the performance of an integrated circuit.

